

REMARKS

Claims 1, 2, 4, 5, 7-10, 12-16 and 18-29 are pending in this application.

I. Rejection Under 35 USC 102

Claims 1, 2, 4-10, 12-14, 18, 20-26, 28 and 29 were rejected under 35 USC 102(b) as allegedly being anticipated by US Patent No. 4,869,849 to Hirose et al. (hereinafter "Hirose"). The rejection is respectfully traversed.

The Patent Office alleges that Hirose teaches or suggests each and every feature recited in the foregoing claims. Applicants respectfully disagree with the allegations by the Patent Office.

The Patent Office alleges that Hirose discloses first and second feed channels because Hirose discloses reference numbers 6, 6 as shown in Fig. 4 (which was cited by the Patent Office). Contrary to the Patent Office's allegations, Hirose's reference numbers 6, 6 (shown at the left and right edges of the circular disc-shaped pressure plates 7 in Fig. 4) actually represent many tiny holes 6, 6 in the circular disc-shaped pressure plates 7 as shown in Figs. 1, 2A, 2B and 4. Applicants submit that Hirose's many tiny holes 6, 6 formed in a generally annular band around the pressure plates 7 do not teach or suggest first and second feed channels as specifically defined in the present claims.

Claim 1 requires that the at least one first slot opening of the at least one slotted plate overlaps the first feed channel and the at least one second slot opening of the at least one slotted plate overlaps the second feed channel. Claim 25 requires the steps of leading the first fluid phase from a first feed channel through at least one first slot opening of at least one slotted plate and leading the second fluid phase from a second

feed channel through at least one second slot opening of the at least one slotted plate. Thus, the first feed channel is adapted to pass a first fluid into a first slot opening and the second feed channel is adapted to pass a second fluid into a second slot opening. Hirose's alleged first and second feed channels (tiny holes 6, 6) do not disclose the presently claimed first feed channel (overlapped by at least one first slot opening of the at least one slotted plate) and the presently claimed second feed channels (overlapped by the at least one first slot opening of the at least one slotted plate) because Hirose's tiny holes 6, 6, at best, are configured to pass the two fluids through the tiny holes 6, 6 and into the same concave depression in the following collection plate 11 (see Fig. 4 and col. 3, lines 3-12).

Moreover, Hirose's inlets 2 and 3 (see in Fig. 1) do not disclose first and second feed channels that are overlapped by first and second slot openings, respectively, as required by the present claims. Specifically, there is no overlap whatsoever between Hirose's inlet 2 and any of the many tiny holes 6 in the topmost pressure plate as shown in Fig. 1. Instead, Hirose's inlet 2 opens above a center of the topmost flanged plate 13 so that fluid forced through the inlet 2 passes through a through-hole 12 in the center of the flanged plate 13 and spreads out inside cavity 17 of the flanged plate 13. However, the center of the flanged plate 13 is completely devoid of any openings (see Fig. 1 and col. 2, lines 64-68). Thus, Hirose's inlets 2 and 3 clearly fail to disclose the presently claimed first feed channel (overlapped by at least one first slot opening of the at least one slotted plate) and second feed channels (overlapped by the at least one first slot opening of the at least one slotted plate).

Nowhere does Hirose disclose that the at least one first slot opening of the at least one slotted plate overlaps the first feed channel and the at least one second slot opening of the at least one slotted plate overlaps the second feed channel as recited in claim 1. Moreover, Hirose fails to disclose the steps of leading the first fluid phase from a first feed channel through at least one first slot opening of at least one slotted plate and leading the second fluid phase from a second feed channel through at least one second slot opening of the at least one slotted plate as required by claim 25.

Because the above-identified features of independent claims 1 and 25 are neither taught nor suggested by Hirose, Hirose cannot anticipate, and would not have rendered obvious, the features specifically defined in claims 1 and 25 and their dependent claims.

For at least these reasons, claims 1, 2, 4-10, 12-14, 18, 20-26, 28 and 29 are patentably distinct from and/or non-obvious in view of Hirose. Reconsideration and withdrawal of the rejection of the claims under 35 USC 102(b) are respectfully requested.

II. Rejections Under 35 USC 103

A. Hirose

Claims 15, 16, 19, 26 and 27 were rejected under 35 USC 103(a) as allegedly being unpatentable over Hirose. This rejection is respectfully traversed.

The Patent Office alleges that Hirose teaches or suggest the features of the foregoing claims. Applications respectfully disagree with the Patent Office.

As discussed above with respect to the rejection under 35 USC 102(b), Hirose fails to teach or suggest that the at least one first slot opening of the at least one slotted plate overlaps the first feed channel and the at least one second slot opening of the at least one slotted plate overlaps the second feed channel as recited in claim 1, from which claims 15, 16, 19 and 26, directly or indirectly, depend. Moreover, Hirose does not teach or suggest leading the first fluid phase from a first feed channel through at least one first slot opening of at least one slotted plate and leading the second fluid phase from a second feed channel through at least one second slot opening of the at least one slotted plate as required by claim 25, from which claim 27 depends.

Moreover, Hirose's fluid mixing apparatus operates according to a different principle than that of the presently claimed invention. The presently claimed invention leads two separate fluid streams from two separate feed channels, respectively, into two separate slot openings in a slotted plate, respectively, whereby the two separate fluid streams are subsequently combined in an aperture slot of an aperture plate to effect mixing. In contrast, Hirose discloses that the separate two fluids from separate inlets 2 and 3 are immediately combined and mixed at the very start in cavity 17 of the flanged plate 13, and then the mixture of the two fluid is put through a series of plates with holes (col. 2, line 64 – col. 3, line 5). Accordingly, Hirose does teach or suggest the specific features defined in the presently claim invention.

Because the above-identified features of independent claims 1 and 25 are neither taught nor suggested by Hirose, Hirose would not have rendered obvious, the features specifically defined in claims 1 and 25 and their dependent claims.

For all the foregoing reasons, Applicants respectfully submit that Hirose would not have led one of ordinary skill in the art to required features of claims 15, 16, 19, 26 and 27. Reconsideration and withdrawal of this rejection are respectfully requested.

B. Hirose in view of Lowe et al.

Claims 8 was rejected under 35 USC 103(a) as allegedly being unpatentable over Hirose in view of U.S. Patent Publication No. 2004/0027915 to Lowe et al. (hereinafter "Lowe"). This rejection is respectfully traversed.

The Patent Office alleges that the combination of Hirose and Lowe teach or suggest the features of claim 8. Applicants respectfully disagree with the allegations of the Patent Office.

Applicants submit that Lowe fails to remedy the deficiencies of Hirose with respect to claim 1, from which claim 8 directly depends, because Lowe also fails to teach or suggest a first slot opening of the a slotted plate overlapping a first feed channel and a second slot opening of a slotted plate overlapping a second feed channel.

Hirose and Lowe, taken singly or in combination, fail to teach or suggest that the at least one first slot opening of the at least one slotted plate overlaps the first feed channel and the at least one second slot opening of the at least one slotted plate overlaps the second feed channel as required by claim 1.

Because the above-identified features of independent claim 1 are neither taught nor suggested by Hirose and Lowe, taken singly or in combination, these references

would not have rendered obvious, the features specifically defined in claim 1 and its dependent claims.

For all the foregoing reasons, Applicants respectfully submit that Hirose and Lowe would not have led one of ordinary skill in the art to required features of claim 8. Reconsideration and withdrawal of this rejection are respectfully requested.

C. JP 2002-346352

Claims 1, 2, 4, 5, 7, 9, 10, 12-16 and 18-29 were rejected under 35 USC 103(a) as allegedly being unpatentable over JP 2002-346352 (hereinafter "JP 352"). This rejection is respectfully traversed.

The Patent Office acknowledges that JP 352 does not disclose a feed channel above the aperture plate 11 and being overlapping with the slot opening 12 of 10b (see page 8 of the present Office Action). The Patent Office alleges that it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide multiple stacks of the configuration of JP 352, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. Moreover, the Patent Office alleges that the provision of multiple stacks would thereby provide feed channels which are overlapped with the slot opening and the structural configuration as required by the instant claims. Applicants respectfully disagree with the allegations of the Patent Office.

Similarly to Hirose, JP 352 discloses a grid with small openings, which is formed by crossing a first thickness 10a having slit holes 11 and a second thickness 10b having slit holes 12. However, JP 352's device is incapable of splitting and combining two fluid

streams in a manner similar to that of the presently claimed invention because JP 352 also operates according to a different principle than the presently claimed invention. JP 352's emulsifier operates according to a different principle because JP 352's emulsifier does not having first and second feed channels as acknowledged by the Patent Office. Thus, JP 352 also fails to teach or suggest a first slot opening overlapping a first feed channel and second slot opening overlapping a first feed channel. Therefore, even if a skilled artisan were to stack multiple devices according to JP 352, the resulting combination would fail to achieve the presently claimed invention because JP 352 fails to teach or suggest (a) first and second feed channels and (b) any structural relationship between the first and second feed channels and the first and second slot openings.

According, JP 352 does not teach or suggest that the at least one first slot opening of the at least one slotted plate overlaps the first feed channel and the at least one second slot opening of the at least one slotted plate overlaps the second feed channel as recited in claim 1. Moreover, JP 352 fails to teach or suggest leading the first fluid phase from a first feed channel through at least one first slot opening of at least one slotted plate and leading the second fluid phase from a second feed channel through at least one second slot opening of the at least one slotted plate as required by claim 25.

Because the features of independent claims 1 and 25 are not taught or suggested by JP 352, JP 352 would not have rendered the features of claims 1 and 25 obvious to one of ordinary skill in the art.

For at least these reasons, claims 1, 2, 4, 5, 7, 9, 10, 12-16 and 18-29 are patentable over JP 352. Thus, withdrawal of the rejection under 35 USC 103(a) is respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 2, 4, 5, 7-10, 12-16 and 18-29 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Early and favorable action is earnestly solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If entry and consideration of the amendments above requires an extension of time, Applicants respectfully request that this be considered a petition therefor. The Commissioner is authorized to charge any fee(s) due in this connection to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to Deposit Account
No. 14-1263.

Respectfully submitted,
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